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## A SURVEY OF RAPTORS IN NORTHERN UTAH, 1976-79

by

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### Abstract

A roadside survey of raptors was conducted in Cache Valley, Utah during 3 (1976-77, 1977-78, and 1978-79) non-nesting seasons (November to mid-April). The Rough-legged Hawk (*Buteo lagopus*) was most numerous, followed in abundance by the Red-tailed Hawk (*Buteo jamaicensis*), Marsh Hawk (*Circus cyaneus*) and American Kestrel (*Falco sparverius*). Thirteen other species of raptors were observed. Male Kestrels were 2 to 3 times more abundant than females in December through March. Light phase individuals were 3 to 5 times more numerous than dark phase birds among Red-tailed Hawks and Rough-legged Hawks.

### Introduction

The present study was undertaken to provide information on the relative numbers of raptors during the non-breeding season in Cache Valley, Utah. Surveys of raptors taken over several months from roads can provide information on distribution and seasonal changes in abundance of birds of prey.

### Study Area

Cache Valley is bordered on the west by the Wellsville Mountains and Clarkston Mountains and on the south and east by the Bear River Range. The northern boundary of the study area was the Utah-Idaho border (Figure 1). Average elevation of the valley is 1,341 m. The area is a mosaic of agricultural lands (irrigated pasture and hayland, and dry cropland), urban areas, river floodplains, foothills, marshlands and open water.

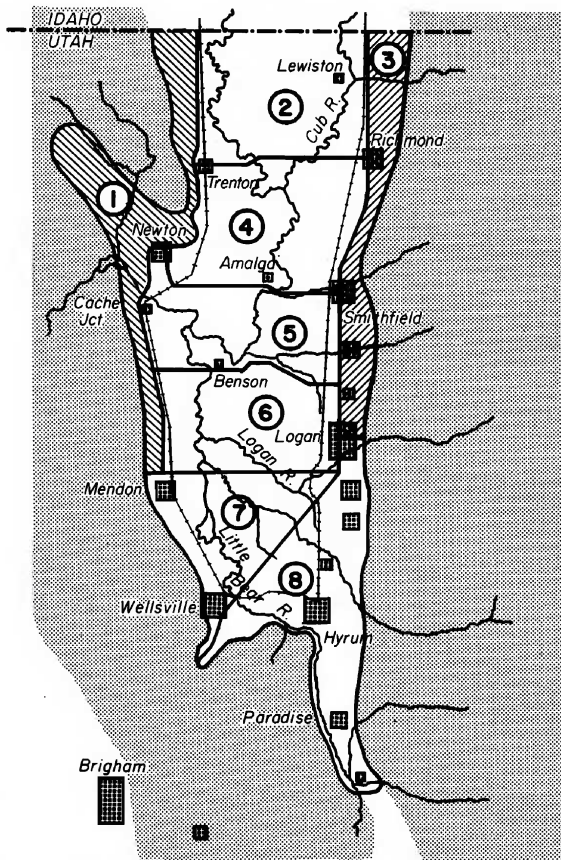


Figure 1.—A map of Cache Valley, Utah showing the 8 census areas included in the raptor survey.

### Methods

About 95% of the total surface area in Cache Valley, Utah was divided into 8 census areas. These 8 areas ranged from 8,080 to 10,664 hectares. The total area censused was 77,024 ha (770.3 km<sup>2</sup>). The location of each area and its identification number are shown in Figure 1. The area of each habitat type is given in Table 1.

Table 1. The surface areas of seven major habitat types within eight census areas in Cache Valley, Utah

SURFACE AREA (HECTARES) OF MAJOR HABITAT TYPES IN EACH CENSUS AREA								
	1	2	3	4	5	6	7	8
Urban Area	157	236	2,788	189	583	677	661	3,182
Irrigated Pasture and Hayland	3,497	8,576	2,928	6,710	7,760	3,750	5,325	6,490
Dry Cropland	4,678	--	772	457	803	--	1,166	992
Native Grazingland	1,528	--	3,355	268	--	2,551	1,967	--
Open Water	63	--	--	63	457	472 <sup>1</sup>	--	--
River Floodplain	--	1,355	--	882	205	--	--	--
Marshland	--	64	--	315	267	630	205	--
Total Area	9,923	10,231	9,843	8,884	10,075	8,080	9,324	10,664

<sup>1</sup>189 hectares is an open sewage treatment lagoon

Eight censuses of the total area were conducted between November and mid-April over a period of 3 winters; 1976-1977 (3 censuses), 1977-1978 (2 censuses), and 1978-1979 (3 censuses). The censuses, except for 20 January 1979, were completed over a period of 2 to 7 days. Usually each area was censused by a different group of observers. The number of observers in each group ranged from 2 to 6 (av. 2.4). The number of observers and total observer hours involved in each of the 8 censuses is reported in Table 2.

Each group tried to drive all of the paved and gravel roads in their census area. Sometimes snow made some gravel roads impassable. In addition, ungraveled roads that led to otherwise inaccessible areas were driven when road conditions permitted. The distance driven during each census is shown in Table 2.

Mean temperature, precipitation and snow on the ground for each census is given in Table 2. Wind during the censuses was less than 12 km/hr. Censuses were not taken during conditions of snow or rain that impaired visibility.

Table 2. A summary of kilometers driven, number of participants, and weather for each raptor census

Dates of Censuses			Participants		Weather During Census Period			
			Total Km Driven	Number of Observers	Total Observer Hours	Temperature (°C)	Mean Snow On Ground	Precipitation (cm)
Month	Day(s)	Year			Max	Min		
Nov	3-7	1977	933	20	96.1	15.0	0.6	.38 on Nov. 6
Dec	2-8	1978	756	24	101.5	1.7	-7.2	.48 on Dec. 5
Dec	5-10	1976	825	11	--	5.0	-8.3	.20 on Dec. 5
Jan	20	1979	789	16	80.0	-2.2	-10.0	28 Trace
Feb	11-18	1978	805	17	75.0	2.2	-7.2	Everyday, total 1.9
Feb	19-23	1977	889	24	128.5	10.6	-3.3	.63 on Feb. 22
March	3-4	1979	686	20	83.5	1.1	-13.3	.66 on March 3
April	9-15	1977	784	18	90.0	17.8	1.1	.69 on April 15
Mean			810		93.5			

## Results and Discussion

### Relative Abundance

Rough-legged Hawks, Red-tailed Hawks, March Hawks and American Kestrels were abundant. Counts of 25 or more/day/1,000 km driven were usual for each species, and on average, they comprised 81% of the raptors in Cache Valley (Table 3). None of the raptors was categorized as common although the Prairie Falcon (*Falco mexicanus*) was fairly common. An average of 8.1 was observed in the Valley/1,000 km driven. A ranking of 10 uncommon raptor species (i.e., average counts of less than 4/census) from the most numerous to the least numerous is shown in Table 3.

A few Osprey (*Pandion haliaetus*) migrate through Cache Valley in April on their way to northern nesting grounds. The one observation of a Harris Hawk (*Parabuteo unicinctus*) was probably a semi-tame individual released by or escaped from a falconer. It was approachable at close range and was unmistakably identified.

Craig (1978) conducted a car survey over a 187 km route in southeastern Idaho during non-nesting seasons from November 1974 to May 1976 and found that Rough-legged Hawks were the most numerous, followed in abundance by the American Kestrel and the Golden Eagle (*Aquila chrysaetos*)<sup>1</sup>

### Seasonal Changes in Abundance

The Rough-legged Hawk and Prairie Falcon are winter residents (WR) in Cache Valley, but do not nest in the Valley nor in surrounding mountains. In the early March census, Rough-legged Hawks were still as numerous as in the mid-winter censuses and Prairie Falcons were still present (Table 4). In the mid-April census only 3 Rough-legged Hawks still lingered in the Valley but Prairie Falcons were absent.

American Kestrels increased dramatically from March to April as individuals migrated into the Valley to establish breeding territories. The Swainson's Hawk (*Buteo swainsoni*) appears in April as individuals arrived from their southern wintering grounds.

### Distribution in the Valley

The 4 abundant species were observed in all 8 census areas, but were more abundant in areas 5, 6 and 7 in the central part of the Valley.

The Prairie Falcon was the only other species observed in all 8 areas. The average number of individuals observed per census ranged from 0.4 in area 3 to 1.9 in area 5.

The Sharp-shinned Hawk (*Accipiter striatus*) was absent in areas 2 and 8 where 87% and 94%, respectively, of the area is in urban development and irrigated pasture and hayland. The Short-eared Owl (*Asio flammeus*) was most numerous in census area 6. They were concentrated along a strip of old field that bordered the east side of the Logan sewage treatment lagoon. The Goshawk (*Accipiter gentilis*) was observed in the 4 areas that bordered the mountains (areas 1, 3, 7 and 8).

### Sex and Color Phase Differences

From the census data of 3–7 November 1977, 20 January 1979 and 11–18 February 1978 where the color phase was identified for at least 75% of the birds observed, light

<sup>1</sup>Ed. Note: Several people who have done similar roadside counts suggest one should use caution in using data from different years to show changes in seasonal abundance.

Table 3. Mean number of raptor species observed per census in 8 census areas in Cache Valley, Utah

Species	MEAN NUMBERS OF BIRDS OBSERVED PER CENSUS <sup>1</sup> IN EACH CENSUS AREA								Total	Percent of Mean Grand Total <sup>2</sup>	Total per 1,000 km Driven	Status <sup>3</sup>
	1	2	3	4	5	6	7	8				
Rough-legged Hawk	3.6	0.9	3.7	5.3	11.7	13.9	8.9	2.4	50.3	23.6	62.1	WR
Red-tailed Hawk	1.0	2.4	3.3	5.3	9.6	4.2	13.4	5.7	44.9	21.0	55.4	R
Marsh Hawk	1.7	1.9	0.9	4.8	9.6	10.9	8.9	0.7	39.3	18.4	48.5	R
American Kestrel	2.9	5.7	3.6	3.0	9.0	4.6	5.1	4.1	38.0	17.8	46.9	R
Unidentified Buteos	0.4	0.9	1.4	2.7	2.7	2.1	6.3	1.1	17.7	8.3	21.9	--
Prairie Falcon	1.1	0.6	0.4	1.1	1.9	0.6	1.0	0.9	7.6	3.6	9.4	WR
Short-eared Owl	0.0	0.1	0.0	0.0	0.0	4.4	0.1	0.0	4.7	2.2	5.8	R
Golden Eagle	0.0	0.3	0.4	0.1	0.3	0.3	0.4	1.0	2.9	1.4	3.6	R
<i>Aquila chrysaetos</i>												
Great-horned Owl	0.0	0.4	0.1	0.0	0.0	0.3	1.0	0.0	1.9	0.9	2.3	R
<i>Bubo virginianus</i>												
Bald Eagle	0.0	0.1	0.0	0.1	0.0	0.7	0.1	0.3	1.4	0.7	1.7	WR
<i>Haliaeetus leucocephalus</i>												
Sharp-shinned Hawk	0.1	0.0	0.1	0.1	0.1	0.3	0.1	0.0	1.0	0.5	1.2	R
<i>Accipiter striatus</i>												
Goshawk	0.3	0.0	0.3	0.0	0.0	0.0	0.3	0.1	1.0	0.5	1.2	R
<i>Accipiter gentilis</i>												
Cooper's Hawk	0.0	0.3	0.3	0.1	0.0	0.0	0.1	0.0	0.8	0.4	1.0	R
<i>Accipiter cooperi</i>												
Merlin	0.0	0.0	0.0	0.3	0.0	0.0	0.1	0.3	0.7	0.3	0.9	WR
<i>Falco columbarius</i>												
Harlan's Hawk	0.0	0.0	0.0	0.0	0.0	0.1	0.6	0.0	0.7	0.3	0.9	A
<i>Buteo borealis</i>												
	11.1	13.7	14.5	23.1	45.1	42.6	46.5	16.7	212.9		263.6	

<sup>1</sup>The April 9-15, 1977 census was not included in these means.<sup>2</sup>WR = winter resident, R = year-round resident, A = accidental<sup>3</sup>Mean Grand Total = 212.9

Table 4. Number of individuals of each species observed in each census (columns A) per 1,000 km driven (columns B)

SPECIES	CENSUS DATES															
	Nov.		Dec.		Jan.		Feb.		Feb.		March		April			
	A	B	A	B	A	B	A	B	A	B	A	B	A	B		
	3-7	2-8	5-10	20	11-18	19-23	3-4	9-15								
	1977	1978	1976	1979	1978	1977	1979	1977	1979	1977	1979	1977	1977	1977		
Rough-legged Hawk	33	35.4	58	76.7	42	50.9	59	74.8	65	80.7	39	43.9	56	81.6	3	3.8
Red-tailed Hawk	57	61.1	57	75.4	38	46.1	47	59.6	35	43.5	46	51.7	34	49.6	29	37.0
Marsh Hawk	31	33.2	49	64.8	38	48.1	17	21.5	47	58.4	55	61.9	38	55.4	33	42.1
American Kestrel	36	38.6	30	39.7	40	48.5	41	52.0	53	65.8	27	30.4	41	59.8	174	221.9
Unidentified Buteos	21	22.5	21	27.8	17	20.6	22	27.9	14	17.4	18	20.2	11	16.0	4	5.1
Prairie Falcon	1	1.1	5	6.6	12	14.5	6	7.6	9	11.1	14	15.7	6	8.7	0	0.0
Short-eared Owl	0	0.0	2	2.6	0	0.0	15	19.0	1	1.2	0	0.0	15	21.9	6	7.7
Golden Eagle	4	4.3	5	6.6	2	2.4	3	3.8	1	1.2	2	2.2	3	4.4	4	5.1
Great-horned Owl	2	2.1	2	2.6	1	1.2	4	5.1	2	2.5	2	2.2	0	0.0	4	5.1
Bald Eagle	0	0.0	1	1.3	0	0.0	2	2.5	4	5.0	3	3.4	0	0.0	0	0.0
Sharp-shinned Hawk	2	2.1	0	0.0	0	0.0	1	1.3	1	1.2	0	0.0	3	4.4	1	1.3
Goshawk	0	0.0	0	0.0	1	1.2	2	2.5	0	0.0	3	3.4	1	1.5	0	0.0
Cooper's Hawk	0	0.0	0	0.0	2	2.4	1	1.3	0	0.0	2	2.2	1	1.5	2	2.6
Merlin	1	1.1	1	1.3	1	1.2	0	0.0	0	0.0	2	2.2	0	0.0	0	0.0
Harlan's Hawk	1	1.1	1	1.3	0	0.0	1	1.3	1	1.2	1	1.1	0	0.0	0	0.0
Swanson's Hawk															12	15.3
Osprey															1	1.3
Harris Hawk															1	1.3
Total	190	204	232	307	194	235	221	280	235	292	215	242	209	305	274	350

phase was more common than dark phase among both Red-tailed and Rough-legged Hawks. For Red-tailed Hawks 22 were dark phase, 116 were light phase and the color phase of 19 was not identified. Among Rough-legged Hawks 23 were dark phase, 76 were light phase and the color phase of 30 was not identified.

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## **WINTER ROADSIDE RAPTOR SURVEY IN EL PASO COUNTY, COLORADO, 1962–1979**

by

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#### *Abstract*

A fixed-route car survey was conducted from October to February 1979–80 on a 103-km strip of predominantly rangeland east of Colorado Springs, Colorado. Comparison of these data with past relative density data from 1962–1979 shows fairly steady numbers for 7 of the 8 species. Rough-legged Hawks showed a slight decline. Most raptors were seen perched on REA poles. Cropland was used most by all species considering its availability to the area.

#### *Introduction*

Car surveys are a convenient method for sampling raptor populations which are conspicuous yet thinly distributed over large areas. Previous car surveys on rangeland in eastern Colorado have been conducted showing estimates of raptor abundance (Enderson 1965, Johnson and Enderson 1972, unpublished data) and behavioral data of perch-site preference (Marion and Ryder 1974, Stahlecker 1978).

The purpose of this study was to compare relative abundance and behavioral patterns with past data to investigate possible trends. Perch-site preference could be important in management of raptors on rangeland.

#### *Materials and Methods*

The 166 km<sup>2</sup> area about 12 km east of Colorado Springs, Colorado is a 103-km circuitous strip 1.6 km wide. It is predominantly (90.9%) rangeland comprised mainly of blue gramma (*Bouteloua gracilis*) and sandhill